



## SEQUENCE LISTING

<110> Duff, Gordon W.  
di Giovine, Francesco Saverio

<120> THERAPEUTIC AND DIAGNOSTIC BASED ON A NOVEL IL-1B  
MUTATION

<130> MSA-004.01

<140> 09/247,874

<141> 1999-02-10

<160> 18

<170> PatentIn Ver. 2.0

<210> 1

<211> 9721

<212> DNA

<213> Homo sapiens

<220>

<223> IL-1beta

<220>

<223> "n" at various positions throughout the sequence  
represent a, t, c, g or unknown

<400> 1

agaaagaaag	agagagagaa	agaaaagaaa	gaggaaggaa	ggaaggaagg	aagaaagaca	60
ggctctgagg	aaggtggcag	ttcctacaac	gggagaacca	gtgggttaatt	tgcaaagtgg	120
atcctgtgga	ggcanncaga	ggagtccctt	aggccacca	gacagggctt	ttagctatct	180
gcaggccaga	caccaaattt	caggagggtt	cagtgttagg	aatggattat	ggcttatcaa	240
attcacagga	aactaacatg	ttgaacagct	tttagatttc	ctgtggaaaa	tataacttac	300
taaagatgga	gttcttgtga	ctgactcctg	atatcaagat	actgggagcc	aaattaaaaa	360
tcagaaggct	gcttggagag	caagtccatg	aaatgctctt	tttccacag	tagaacctat	420
ttccctcgtg	tctcaaatac	ttgcacagag	gtcactccc	ttggataatg	cagagcgagc	480
acgataacctg	gcacatacta	atttgaataa	aatgctgtca	aattcccatt	caccatttca	540
agcagcaaac	tctatctcac	ctgaatgtac	atgccaggca	ctgtgctaga	cttggctcaa	600
aaagatttca	gtttctctga	ggaaccagga	gggcaagggt	tcaactcagt	gctataagaa	660
gtgttacagg	ctggacaagg	tggtcacgc	ctgtaatccc	aacatttggg	aggccgaggc	720
gggcagatca	caaggtcagg	agatcgagac	catcctggct	aacatgggtg	aacctgtct	780
ctactaaaaa	tacaaaaaat	tagccgggcg	ttggcggcag	gtgcctgtag	tcccagctgc	840
tggggagggt	gaggcaggag	aatggtgtga	acccgggagg	cggaacttgc	agggggccga	900
gatcgtgcc	ctgcactcca	gcctgggcga	cagagtgaga	ctctgtctca	aaaaaaaaaa	960
aaaagtgtta	tgatgcagac	ctgtcaaaga	ggcaaaggag	ggtgttctta	cactccaggc	1020
actgttcata	acctggaact	tcattcattc	tacaaatgga	gggtccctcc	gggcagatcc	1080
ctggagcagg	cactttgtctg	gtgtctcggt	taaagagaaa	ctgataactc	ttggtattac	1140
caagagatag	agtctcagat	ggatattctt	acagaaacaa	tattccact	tttcagagtt	1200
caccataaaa	tcatttttagg	cagagctcat	ctggcattga	tctggttcat	ccatgagatt	1260
ggctagggta	acagcacctg	gtcttgcagg	gttgtgtgag	cttatctcca	gggttgcctc	1320
aactccgtca	ggagcctgaa	ccctgcatac	cgtatgttct	ctgccccagc	caagaaaggt	1380
caattttctc	ctcagaggct	cctgcaattg	acagagagct	cccagggcag	agaacagcac	1440
ccaaggtaga	gacccacacc	ctcaatacag	acagggaggg	ctattggccc	ttcattgtac	1500
ccatttatcc	atctgtaagt	gggaagattc	ctaaacttaa	gtacaaaagaa	gtgaatgaag	1560
aaaagtatgt	gcattgtataa	atctgtgtgt	cttccacttt	gtccacata	tactaaattt	1620
aaacattctt	ctaactgtgg	aaaatccagt	attttaatgt	ggacatcaac	tgcaacaaga	1680

ttgtcaggaa	aacaatgcac	atthtgcattg	tgatacatth	gcaaaatgtg	tcatagtttg	1740
ctactccttg	cccttccatg	aaccagagaa	ttatctcagt	ttattagtec	cctccccata	1800
gaagcttcca	ccaataactc	tttccccctt	ccttttaact	gattgtgaaa	tcagggtatt	1860
aacagagaaa	ttttctcagc	tcctactttc	gcttttgaaa	gctataaaaa	cagcgaggga	1920
gaaactggca	gataccaaac	ctcttcgagg	cacaaggcac	aacaggctgc	tctgggattc	1980
tcttcagcca	atcttcattg	ctcaagtatg	actttaatct	tccttacaac	taggtgctaa	2040
gggagtctct	ctgtctctct	gcctctttgt	gtgtatgcac	attctctctc	tctctctctt	2100
tctttctctg	tctctctctc	ccttccctct	tgctctctct	ctcagctttt	tgcaaaaatg	2160
ccagggtgtaa	tataatgctt	atgactcggg	aaatattctg	ggaatggata	ctgcttatct	2220
aacagctgac	accctaaagg	ttagtgtcaa	agcctctgct	ccagctctcc	tagccaatac	2280
attgctagtt	gggggtttgg	ttagcaaatg	cctttctcta	gaaccaaagg	acttctcttt	2340
cacacattca	ttcattttact	cagagatcat	ttcttttgcac	gactgccatg	caactggatg	2400
tgagagaaat	cacacatgaa	cgtagccctc	atgggggaagt	caactcattt	ctccttttta	2460
cacagggtgtc	tgaagcagcc	atggcagaag	tacctgagct	cgccagtgaa	atgatggctt	2520
attacaggtc	agtggagacg	ctgagaccag	taacctgagc	aggtctctct	tttcaagagt	2580
agagtgttat	ctgtgctttg	agaccagatt	tttccccata	attgcctctt	tcagtggcaa	2640
acagggtgcc	aagtaaatct	gattttaaaga	ctactttccc	attacaagtc	cctccagcct	2700
tgggacctgg	aggtatccca	gatgtgttgt	tgcaagggtc	tcctgcagag	gcaaatgggg	2760
agaaaagatt	ccaagccccc	aatacaagga	atcccccttg	aaagtgtggc	ttggaggggg	2820
agggagagct	cagatttttag	ctgactctgc	tgggctagag	gttaggcctc	aagatccaac	2880
agggagcacc	aggggtgccc	cctgccaggc	ctagaatctg	ccttctggac	tgttctgccc	2940
atatcactgt	gaaacttgcc	aggtgtttca	ggcagctttg	agaggcaggc	tgtttgagct	3000
ttcttatgaa	cagtcaagtc	ttgtacacag	ggaaggaaaa	ataaacctgt	ttagaagaca	3060
taattgagac	atgtccctgt	ttttattaca	gtggcaatga	ggatgacttg	ttctttgaag	3120
ctgatggccc	taaacagatg	aaggtaagac	tatgggttta	actcccaacc	caagggaagg	3180
ctctaacaca	gggaaagctc	aaagaaggga	gttctggggc	actttgatgc	catgggtatt	3240
tgttttagaa	agacttttaac	ctcttccagt	gagacacagg	ctgcaccact	tgctgacctg	3300
gccacttggt	catcatatca	ccacagtcac	tcactaacgt	tggtgggtgt	ggccacactt	3360
gggtgtgaca	ggggaggagt	agtgtataat	ttcccatttc	atagtaggaa	gacaaccaag	3420
tcttcaacat	aaatttgatt	atccttttta	gagatggatt	cagcctatgc	caatcacttg	3480
agttaaactc	tgaaaaccaag	agatgatctt	gagaactaac	atatgtctac	cccttttgag	3540
tagaatagtt	ttttgtctac	tgggggtgaag	cttataacaa	caagacatag	atgatataaa	3600
caaaaagatg	aattgagact	tgaagaaaaa	ccattcactt	gctgtttgac	cttgacaagt	3660
cattttaccc	gctttggacc	tcattctgaaa	aataaaagggc	tgagctggat	gatctctgag	3720
attccagcat	cctgcaacct	ccagttctga	aatattttca	gttgtagcta	agggcatttg	3780
ggcagcaaat	ggteattttt	cagactcctc	cttacaaga	gccatgttat	attcctgctg	3840
tcccttctgt	tttatatgat	gctcagtagc	cttccctagg	gcccagccat	cagcctagct	3900
aggtcagttg	tgcaggttgg	aggcagccac	ttttctctgg	ctttatttta	ttccagtttg	3960
tgatagcctc	ccttagcctc	ataatccagt	cctcaatctt	gttaaaaaaca	tatttcttta	4020
gaagttttaa	gactggcata	acttcttggc	tgcagctgtg	ggaggagccc	attggcttgt	4080
ctgcctggcc	tttgccccc	attgcctctt	ccagcagctt	ggctctgctc	caggcaggaa	4140
attctctctc	gctcaacttt	cttttgtgca	cttacagggtc	tctttaactg	tctttcaagc	4200
ctttgaacca	ttatcagcct	taaggcaacc	tcagtgaagc	cttaatacgg	agcttctctg	4260
aataagagga	aagtggtaac	atttcacaaa	aagtactctc	acaggatttg	cagaatgcct	4320
atgagacagt	gttatgaaaa	aggaaaaaaa	agaacagtgt	agaaaaattg	aatacttget	4380
gagttagcat	aggtgaatgg	aaaatgttat	ggctcatctg	atgaaaaagc	aaatcatagt	4440
gtgacagcat	tagggatata	aaaagatata	gagaagggtat	acatgtatgg	tgtagggtgg	4500
gcatgtacaa	aaagatgaca	agtagaatcg	ggattttatc	taaagaatag	cctgtaagg	4560
gtccagaagc	cacattctag	tcttgagctc	gcctctacct	gctgtgtgcc	cttgagtaca	4620
cccttaacct	ccttgagctt	cagagaggga	taactttttt	attttatttt	attttatttt	4680
gttttgtttt	gtttttatgg	gtttttatgg	acagagtctc	actctgttgc	ccaggctgga	4740
gtgcagtggt	acaactcttg	cttactgcac	cctccacctc	ctgagttcaa	gcgattctcc	4800
ttctcagtc	tctggaatag	ctaggattac	aggtgcaccc	caccacaccc	agctaatttt	4860
tgtattttta	gtagagaagg	ggtttcgcca	tgttgggccag	gctgggtttg	aagtcctgac	4920
ctaaatgatt	catccacctc	ggcttcccaa	agtgtctggg	ttacaggcat	gagccaccac	4980
gcctggccca	gagagggatg	atctttagaa	gctcgggatt	ctttcaagcc	ctttcctcct	5040
ctctgagctt	tctactctct	gatgtcaaac	catgggttct	ggcaggacca	cctcaccagg	5100
ctccctccct	cgtctctctc	gcagtgtctc	ttccaggacc	tggacctctg	ccctctggat	5160

ggcggcatcc	agctacgaat	ctccgaccac	cactacagca	agggcttcag	gcaggccgcg	5220
tcagttgttg	tggccatgga	caagctgagg	aagatgctgg	ttccctgccc	acagaccttc	5280
caggagaatg	acctgagcac	cttctttccc	ttcatctttg	aagaaggtag	ttagccaaga	5340
gcaggcagta	gatctccact	tgtgtcctct	tggaaagtc	caagccccag	ccaactcaat	5400
tccccagag	ccaaagccct	ttaaaggtag	aaggcccagc	ggggagacaa	aacaaagaag	5460
gctggaaacc	aaagcaatca	tctctttagt	ggaaactatt	cttaaagaag	atcttgatgg	5520
ctactgacat	ttgcaactcc	ctcactcttt	ctcaggggccc	tttcacttac	attgtcacca	5580
gaggttcgta	acctccctgt	gggctagtgt	tatgaccatc	accattttac	ctaagtagct	5640
ctgttgctcg	gccacagtga	gcagtaatag	acctgaagct	ggaacccatg	tctaatagtg	5700
tcagggtccag	tgttcttagc	caccccactc	ccagcttcat	ccctactggt	gttgatcatca	5760
gactttgacc	gtatatgctc	aggtgtcctc	caagaaatca	aatttttgcca	cctcgccctca	5820
cgaggccctgc	cctttctgatt	ttatacctaa	acaacatgtg	ctccacattt	cagaacctat	5880
cttctctgac	acatgggata	acgaggctta	tgtgcacgat	gcacctgtac	gatcactgaa	5940
ctgcacgctc	cgggactcac	agcaaaaaag	cttgggtgatg	tctgggtccat	atgaactgaa	6000
agctctccac	ctccaggcac	aggatatgga	gcaacaagggt	aaatggaaac	atcctgggtt	6060
ccctgctcgg	cctctggca	gcttgctaatt	tctccatggt	ttaaacaaag	tagaaagtta	6120
atttaaggca	aatgatcaac	acaagtgaag	aaaaatatta	aaaaggaata	tacaaacttt	6180
ggtcctagaa	atggcacatt	tgattgcact	ggccagtga	tttgtaaca	ggagtgtgac	6240
cctgagaaat	tagacggctc	aagcactccc	aggaccatgt	ccacccaagt	ctcttgggca	6300
tagtgacgtg	tcaattcttc	cacaatatgg	ggtcatttga	tggacatggc	ctaactgcct	6360
gtgggttctc	tcttctgtgt	gttgaggctg	aaacaagagt	gctggagcga	taatgtgtcc	6420
atccccctcc	ccagtcttcc	ccccttgccc	caacatccgt	cccacccaat	gccagggtgg	6480
tccttgtagg	gaaattttac	cgcccagcag	gaacttatat	ctctccgctg	taacgggcaa	6540
aagtttcaag	tgcgggtgaac	ccatcattag	ctgtggtgat	ctgcctggca	tcgtgccaca	6600
gtagccaaag	cctctgcaca	ggagtgtggg	caactaaggc	tgctgacttt	gaaggacagc	6660
ctcactcagg	gggaagctat	ttgctctcac	ccaggccaag	aaaatcctgt	ttctttggaa	6720
tcgggtagta	agagtgtacc	cagggcctcc	aattgacact	gctgtgactg	aggaagatca	6780
aaatgagtgt	ctctctttgg	agccactttc	ccagctcagc	ctctcctctc	ccagtttctt	6840
cccatgggct	actctctgtt	cctgaaacag	ttctggtgccc	tgattttctgg	cagaagtaca	6900
gcttcacctc	tttccctttcc	ttccacattg	atcaagttgt	tcctgctcctg	tggatgggca	6960
cattgccagc	cagtgcacac	atggcttctc	tcttctcttc	cttcagcatt	taaaatgtag	7020
acctcttttc	attctccgtt	cctactgcta	tgaggctctg	agaaaccttc	aggcctttga	7080
ggggaaaccc	taaatcaaca	aaatgacctc	gctattgtct	gtgagaagtc	aagttatcct	7140
gtgtcttagg	ccaaggaacc	tcactgtggg	ttcccacaga	ggctaccaat	tacatgtatc	7200
ctactctcgg	ggctaggggt	tggggtgacc	ctgcatgetg	tgtccctaac	cacaagaccc	7260
ccttctttct	tcagtgggtg	tctccatgtc	ctttgtacaa	ggagaagaaa	gtaatgacaa	7320
aatacctgtg	gccttggggc	tcaaggaaaa	gaatctgtac	ctgtcctgcg	tgttgaaaga	7380
tgataagccc	actctacagc	tggaggtaag	tgaatgctat	ggaatgaagc	ccttctcagc	7440
ctcctgtcac	cacttatctc	cagacaattc	accttctccc	cgcccccatc	cctaggaaaa	7500
gctgggaaca	ggtctattttg	acaagttttg	cattaatgta	aataaattta	acataatttt	7560
taactgcgtg	caaccttcaa	tctgtctgca	gaaaattaaa	tcattttgcc	gatgttatta	7620
tgtcctacca	tagttacaac	cccaacagat	tatatattgt	tagggctgct	ctcatttgat	7680
agacaccttg	ggaaatagat	gacttaaagg	gtcccattat	cacgtccact	ccactcccaa	7740
aatcaccacc	actatcacct	ccagctttct	cagcaaaagc	ttcatttcca	agttgatgtc	7800
attctaggac	cataaggaaa	aatacaataa	aaagccccctg	gaaactaggt	acttcaagaa	7860
gctctagctt	aatttttcacc	cccccaaaaa	aaaaaaattc	tcacctacat	tatgtctctc	7920
agcatttggc	actaagtttt	agaaaagaag	aagggtctct	ttaataatca	cacagaaagt	7980
tgggggcccc	gttacaactc	aggagtctgg	ctcctgatca	tgtgacctgc	tcgtcagttt	8040
cctttctggc	caacccaaag	aacatctttc	ccataggcat	ctttgtccct	tgccccacaa	8100
aaattcttct	ttctcttttg	ctgcagagtg	tagatcccaa	aaattaccca	aagaagaaga	8160
tggaaaagcg	atttgtcttc	aacaagatag	aaatcaataa	caagctggaa	tttgagtctg	8220
cccagttccc	caactggtac	atcagcacct	ctcaagcaga	aaacatgccc	gtcttctctg	8280
gagggaacca	aggcggccag	gatataactg	acttcaccat	gcaatttgtg	tcttctctaaa	8340
gagagctgta	cccagagagt	cctgtgctga	atgtggactc	aatccctagg	gctggcagaa	8400
agggaaacaga	aagggtttttg	agtacggcta	tagcctggac	tttctgtgtg	tctacaccaa	8460
tgcccaactg	cctgccttag	ggtagtgtca	agaggatctc	ctgtccatca	gccaggacag	8520
tcagctctct	ccttttcagg	ccaatcccca	gcccttttgt	tgagccaggc	ctctctcacc	8580
tctcctactc	acttaaagcc	cgcctgacag	aaaccacggc	cacatttggt	tctaagaaac	8640

```

cctctgtcat  tcgtcccccac  attctgatga  gcaaccgctt  cctatattat  ttatttattt  8700
gtttgtttgt  tttgattcat  tgggtctaatt  tattcaaagg  gggcaagaag  tagcagtgtc  8760
tgtaaaagag  cctagttttt  aatagctatg  gaatcaattc  aatttggact  ggtgtgctct  8820
ctttaaatca  agtcctttta  ttaagactga  aaatatataa  gctcagatta  tttaaatggg  8880
aatatttata  aatgagcaaa  tatcatactg  ttcaatgggt  ctgaaataaa  cttcactgaa  8940
gaaaaaaaaa  aaaggggtct  tctgatcat  tgactgtctg  gattgacact  gacagtaagc  9000
aaacaggctg  tgagagttct  tgggactaag  cccactcctc  attgctgagt  gctgcaagta  9060
cctagaaata  tccttggcca  ccgaagacta  tctctctcac  ccattccctt  tatttcgttg  9120
ttcaacagaa  ggatattcag  tgcacatctg  gaacaggatc  agctgaagca  ctgcaggagg  9180
tcaggactgg  tagtaacagc  taccatgatt  tatctatcaa  tgcaccaaac  atctgttgag  9240
caagcgctat  gtactaggag  ctgggagtac  agagatgaga  acagtcacaa  gtccctcctc  9300
agataggaga  ggcagctagt  tataagcaga  acaaggtaac  atgacaagta  gagtaagata  9360
gaagaacgaa  gaggagtagc  caggaaggag  ggaggagaac  gacataagaa  tcaagcctaa  9420
agggataaac  agaagatttc  cacacatggg  ctgggccaat  tgggtgtcgg  ttacgctgtg  9480
aatcccagca  ctttgggtgg  caggggcaga  aagatcgctt  gagcccagga  gttcaagacc  9540
agcctgggca  acatagttag  actcccatct  ctacaaaaaa  taaataaata  aataaaacaa  9600
tcagccaggc  atgctggcat  gcacctgtag  tcttagctac  ttgggaagct  gacactggag  9660
gattgcttga  gcccagaagt  tcaagactgc  agtgagctta  tccgttgacc  tgcaggtcga  9720
c                                                    9721

```

<210> 2

<211> 9721

<212> DNA

<213> Homo sapiens

<220>

<223> IL-1Beta allele 2

<220>

<223> "n" at various positions throughout the sequence  
represent a, t, c, g or unknown

<400> 2

```

agaaagaaag  agagagagaa  agaaaagaaa  gaggaaggaa  ggaaggaagg  aagaaagaca  60
ggctctgagg  aaggtggcag  ttctacaac  gggagaacca  gtggttaatt  tgcaaagtgg  120
atcctgtgga  ggcanncaga  ggagtccct  aggccacca  gacagggtct  ttagctatct  180
gcaggccaga  caccaaattt  caggagggt  cagtgttagg  aatggattat  ggcttatcaa  240
attcacagga  aactaacatg  ttgaacagct  tttagatttc  ctgtggaaaa  tataacttac  300
taaagatgga  gttcttgtag  ctgactcctg  atatcaagat  actgggagcc  aaattaaaaa  360
tcagaaggct  gcttggagag  caagtccatg  aaatgctctt  tttccacag  tagaacctat  420
ttccctcgtg  tctcaaatac  ttgcacagag  gctcactccc  ttggataatg  cagagcgagc  480
acgatacctg  gcacatacta  atttgaataa  aatgctgtca  aattcccatt  caccattcca  540
agcagcaaac  tctatctcac  ctgaatgtac  atgccaggca  ctgtgctaga  cttggctcaa  600
aaagatttca  gtttcttgga  ggaaccagga  gggcaagggt  tcaactcagt  gctataagaa  660
gtgttacagg  ctggacacgg  tggctcacgc  ctgtaatccc  aacatttggg  aggccgaggc  720
gggcagatca  caaggtcagg  agatcgagac  catcctggct  aacatggtga  aacctgtct  780
ctactaaaaa  tacaaaaaat  tagccgggcg  ttggcggcag  gtgcctgtag  tcccagctgc  840
tggggaggct  gaggcaggag  aatggtgtga  acccgggagg  cggaacttgc  agggggccga  900
gatcgtgcc  ctgactcca  gctgggcga  cagagttaga  ctctgtctca  aaaaaaaaaa  960
aaaagtgtta  tgatgcagac  ctgtcaaaga  ggcaaaggag  ggtgttccta  cactccaggc  1020
actgttcata  acctggactc  tcattcattc  tacaaatgga  gggctccct  gggcagatcc  1080
ctggagcagg  cactttgtct  gtgtctcggt  taaagagaaa  ctgataactc  ttggtattac  1140
caagagatag  agtctcagat  ggatattctt  acagaaacaa  tattccact  tttcagagtt  1200
caccaaaaaa  tcattttagg  cagagctcat  ctggcattga  tctgggtcat  ccagagatt  1260
ggctagggt  acagcacctg  gtcttgagg  gttgtgtgag  cttatctcca  ggggtgcccc  1320
aactcgtca  ggagcctgaa  cctgcatac  cgtatgttct  ctgccccagc  caagaaagg  1380
caattttctc  ctgagaggct  cctgcaattg  acagagagct  cccgaggcag  agaacagcac  1440
ccaaggtaga  gacccacacc  ctcaatacag  acagggaggg  ctattggccc  ttcattgtac  1500

```

ccattttatcc	atctgtaagt	gggaagattc	ctaaacttaa	gtacaaaagaa	gtgaatgaag	1560
aaaagtatgt	gcatgtataa	atctgtgtgt	cttccacttt	gtcccacata	tactaaattt	1620
aaacatttct	ctaacgtggg	aaaatccagt	attttaaatgt	ggacatcaac	tgcacaacga	1680
ttgtcaggaa	aacaatgcat	atgtgcatgg	tgatacattt	gcaaaatgtg	tcatagtttg	1740
ctactccttg	cccttccatg	aaccagagaa	ttatctcagt	ttattagtcc	cctcccctaa	1800
gaagcttcca	ccaatactct	tttccccctt	ccttttaactt	gatttgtgaaa	tcaggtattc	1860
aacagagaaa	ttttctcagcc	tcttacttct	gcttttgaaa	gctataaaaa	cagcgaggga	1920
gaaactggca	gataccaaac	ctcttcgagg	cacaaggcac	aacaggctgc	tctgggattc	1980
tcttcagcca	atcttcattg	ctcaagtatg	acttttaatct	tccttacaac	taggtgctaa	2040
gggagtctct	ctgtctctct	gcctctttgt	gtgtatgcat	attctctctc	tctctctctt	2100
tctttctctg	tctctctctt	ccttctctct	tgctctctct	ctcagctttt	tgcaaaaatg	2160
ccaggtgtaa	tataatgctt	atgactcggg	aaatattctg	ggaatggata	ctgcttatct	2220
aacagctgac	accctaaagg	ttagtgtcaa	agcctctgct	ccagctctcc	tagccaatac	2280
attgctagtt	gggggtttgg	ttagcaaatg	cttttctctt	gacccaaagg	acttctcttt	2340
cacacattca	ttcattttact	cagagatcat	ttctttgcat	gactgccatg	cactggatga	2400
tgagagaaat	cacacatgaa	cgtagccgtc	atggggagat	cactcatttt	ctccttttta	2460
cacaggtgtc	tgaagcagcc	atggcagaag	tacctgagct	cgccagtga	atgatggctt	2520
attacagggtc	agtggagacg	ctgagaccag	taacatgagc	aggtctctct	tttcaagagt	2580
agagtgttat	ctgtgcttgg	agaccagatt	tttccccctt	attgctctct	tcagtggcaa	2640
acaggggtgcc	aagtaaatct	gatttaaaaga	ctactttccc	attacaagtc	cctccagcct	2700
tgggacctgg	aggctatcca	gatgtgttgt	tgcaagggct	tcctgcagag	gcaaatgggg	2760
agaaaagatt	ccaagcccac	aatacaagga	atccctttgc	aaagtgtggc	ttggagggag	2820
agggagagct	cagatttttag	ctgactctgc	tgggctagag	gttaggcctc	aagatccaac	2880
agggagcacc	aggggtgccc	cctgccaggc	ctagaatctg	ccttctggac	tgttctgcgc	2940
atatcactgt	gaaacttgcc	aggtgtttca	ggcagctttg	agaggcaggc	tgtttgcagt	3000
ttcttatgaa	cagtcaagtc	ttgtacacag	ggaaggaaaa	ataaacctgt	ttagaagaca	3060
taattgagac	atgtccctgt	ttttattaca	gtggcaatga	ggatgacttg	ttctttgaag	3120
ctgatggccc	taaacagatg	aaggtaagac	tatgggttta	actcccaacc	caaggaaggg	3180
ctctaacaca	gggaaagctc	aaagaaggga	gttctggggc	actttgatgc	catggatttt	3240
tgttttagaa	agactttaac	ctcttccagt	gagacacagg	ctgcaccact	tgttgacctg	3300
gccacttgg	catcatatca	ccacagtcac	tcactaacgt	tggtgggtgg	ggccacactt	3360
gggtggtgaca	ggggaggagt	agtgataatg	ttcccatttc	atagtaggaa	gacaaccaag	3420
tcttcaacat	aaatttgatt	atccttttaa	gagatggatt	cagcctatgc	caatcacttg	3480
agttaaactc	tgaaccaag	agatgatctt	gagaactaac	atatgtctac	cccttttgag	3540
tagaatagtt	ttttgctacc	tggggtgaag	cttataacaa	caagacatag	atgatataaa	3600
caaaaagatg	aattgagact	tgaaagaaaa	ccattcactt	gctgtttgac	cttgacaagt	3660
cattttacc	gctttggacc	tcacttgaaa	aataaaagggc	tgagctggat	gatctctgag	3720
attccagcat	cctgcaacct	ccagttctga	aatattttca	gttgtagcta	agggcatttg	3780
ggcagcaaat	ggtcattttt	cagactcatc	cttacaagaa	gccatgttat	attcctgctg	3840
tcccttctgt	tttatatgat	gctcagtagc	cttctaggtt	gcccagccat	cagcctagct	3900
aggtcagttg	tgcaggttgg	aggcagccac	ttttctctgg	ctttatttta	ttccagtttg	3960
tgatagcctc	ccctagcctc	ataatccagt	cctcaatctt	gttaaaaaa	tattttcttta	4020
gaagttttaa	gactggcata	acttcttggc	tgacagctgt	ggaggagccc	attggcttgt	4080
ctgcctggcc	tttgccccc	attgcctctt	ccagcagctt	ggctctgctc	caggcaggaa	4140
attctctcct	gctcaacttt	cttttgtgca	cttacagggtc	tctttaactg	tctttcaagc	4200
ctttgaacca	ttatcagcct	taaggcaacc	tcagtgaagc	cttaatacgg	agcttctctg	4260
aataagagga	aagtggtaac	atttcacaaa	aagtactctc	acaggatttg	cagaatgctt	4320
atgagacagt	gttatgaaaa	aggaaaaaaa	agaacagtgt	agaaaaattg	aatacttgct	4380
gagtgagcat	aggtgaatgg	aaaatgttat	ggtcatctgc	atgaaaaagc	aatcatagt	4440
gtgacagcat	tagggatata	aaaagatata	gagaaggtat	acatgtatgg	tgtaggtggg	4500
gcctgtacaa	aaagatgaca	agtagaatcg	ggatttatct	taaagaatag	cctgtgaagg	4560
gtccagaagc	cacattctag	tcttgagttc	gcctctacct	gctgtgtgcc	cttgagtaca	4620
cccttaacct	ccttgagctt	cagagagggg	taatcttttt	attttatttt	attttatttt	4680
gttttgtttt	gttttgtttt	gttttatgag	acagagtctc	actctgttgc	ccaggctgga	4740
gtgcagtgg	acaactcttg	cttactgcat	cctccacctc	ctgagttcaa	gcgattctcc	4800
ttctcagtc	tcctgaatag	ctaggattac	aggtgcaccc	caccacaccc	agctaatttt	4860
tgtattttta	gtagagaagg	ggtttcgcca	tgttggccag	gctgggtttg	aagtcctgac	4920
ctaaatgatt	catccacctc	ggcttcccaa	agtgtctggg	ttacaggcat	gagccaccac	4980

gcctggccca	gagagggatg	atcttttagaa	gctcgggatt	ctttcaagcc	ctttcctcct	5040
ctctgagctt	tctactctct	gatgtcaaag	catgggttct	ggcaggacca	cctcaccagg	5100
ctccctcctc	cgctctctcc	gcagtgtctc	ttccaggacc	tggacctctg	ccctctggat	5160
ggcgccatcc	agctacgaat	ctccgaccac	cactacagca	agggcttcag	gcaggcccg	5220
tcagttgttg	tggccatgga	caagctgagg	aagatgctgg	ttccctgccc	acagaccttc	5280
caggagaatg	acctgagcac	cttctttccc	ttcatctttg	aagaaggtag	ttagccaaga	5340
gcaggcagta	gatctccact	tgtgtcctct	tggaagtcac	caagccccag	ccaactcaat	5400
tccccagag	ccaaagccct	ttaaaggtag	aaggcccagc	ggggagacaa	aacaaagaag	5460
gctggaaacc	aaagcaatca	tctcttttag	ggaaactatt	cttaaagaag	atcttgatgg	5520
ctactgacat	ttgcaactcc	ctcactcttt	ctcaggggccc	tttcacttac	attgtcacca	5580
gaggttcgta	acctccctgt	gggctagtgt	tatgaccatc	accattttac	ctaagtagct	5640
ctgttgctcg	gccacagtga	gcagtaatag	acctgaagct	ggaacccatg	tctaatagtg	5700
tcaggteccag	tgttcttagc	caccccactc	ccagcttcac	ccctactggg	gttgtcatca	5760
gactttgacc	gtatatgctc	aggtgtcctc	caagaaatca	aattttgcca	cctcgccctca	5820
cgaggcctgc	ccttctgatt	ttatacctaa	acaacatgtg	ctccacattt	gagaacctat	5880
cttctctgac	acatgggata	acgaggctta	tgtgcacgat	gcacctgtac	gatcactgaa	5940
ctgcacgctc	cgggactcac	agcaaaaaag	cttgggtgatg	tctgggtccat	atgaactgaa	6000
agctctccac	ctccagggac	aggatatgga	gcaacaagggt	aaatggaaac	atcctgggtt	6060
ccctgcctgg	cctcctggca	gcttgctaata	tctccatggt	ttaaacaaag	tagaaagtta	6120
atttaaggca	aatgatcaac	acaagtgaac	aaaaatatta	aaaaggaata	tacaaacttt	6180
ggtectagaa	atggcacatt	tgattgcact	ggccagtgca	tttgtaaca	ggagtgtgac	6240
cctgagaaat	tagacggctc	aagcactccc	aggaccatgt	ccacccaagt	ctcttgggca	6300
tagtgacgtg	tcaattcttc	cacaatatgg	ggtcatttga	tggacatggc	ctaactgect	6360
gtgggttctc	tcttctctgt	gttgaggctg	aaacaagagt	gctggagcga	taatgtgtcc	6420
atccccctcc	ccagtcttcc	ccccttgccc	caacatccgt	cccacccaat	gccagggtgg	6480
tccttgtagg	gaaattttac	cgcccagcag	gaacttatat	ctctccgctg	taacgggcaa	6540
aagtttcaag	tgcggtgaac	ccatcattag	ctgtgggtgat	ctgcctggca	tcgtgccaca	6600
gtagccaaag	cctctgcaca	ggagtgtggg	caactaaggc	tgtgactttt	gaaggacagc	6660
ctcactcagg	gggaagctat	ttgctctcag	ccaggcccaag	aaaatcctgt	ttctttggaa	6720
tcgggtagta	agagtgatec	cagggcctcc	aattgacact	gctgtgactg	aggaagatca	6780
aaatgagtgt	ctctcttttg	agccactttc	ccagctcagc	ctctcctctc	ccagtttctt	6840
cccattgggt	actctctgtt	cctgaaacag	ttctgggtgc	tgattttctg	cagaagtaca	6900
gcttcacctc	tttcccttcc	ttccacattg	atcaagttgt	tcgctcctg	tggatgggca	6960
cattgccagc	cagtgcacac	atggcttctc	tccttctctc	cttcagcatt	taaaatgtag	7020
acctctcttc	attctccgtt	cctactgcta	tgaggctctg	agaaaacctc	aggcctttga	7080
ggggaaaccc	taaatcaaca	aaatgacctc	gctattgtct	gtgagaagtc	aagttatcct	7140
gtgtcttagg	ccaaggaacc	tcactgtggg	ttcccacaga	ggctaccaat	tacatgtatc	7200
ctactctcgg	ggctaggggt	tggggtgacc	ctgcattgct	tgtccctaac	cacaagacct	7260
ccttctttct	tcagtgggtg	tctccatgtc	ctttgtacaa	ggagaagaaa	gtaatgacaa	7320
aatacctgtg	gccttggggc	tcaaggaaaa	gaatctgtac	ctgtcctgcy	tgttgaaaga	7380
tgataagccc	actctacagc	tggaggtgaag	tgaatgctat	ggaatgaagc	ccttctcagc	7440
ctcctgctac	cacttatctc	cagacaattc	accttctccc	cgcccccatc	cctaggaaaa	7500
gctgggaaca	ggtctatatt	acaagttttg	cattaatgta	aataaattta	acataatttt	7560
taactgcgtg	caaccttcaa	tcctgctgca	gaaaattaaa	tcattttgcc	gatgttatta	7620
tgtcctacca	tagttacaac	cccaacagat	tatatattgt	tagggctgct	ctcatttgat	7680
agacaccttg	ggaaatagat	gacttaaagg	gtcccattat	cacgtccact	ccactcccaa	7740
aatcaccacc	actatcacct	ccagctttct	cagcaaaaagc	ttcatttcca	agttgatgtc	7800
attctaggac	cataaggaaa	aatacaataa	aaagccccctg	gaaactaggt	acttcaagaa	7860
gctctagctt	aattttcacc	cccccaaaaa	aaaaaaattc	tcacctacat	tatgtctctc	7920
agcatttggc	actaagtttt	agaaaagaag	aagggtctct	ttaataatca	cacagaaagt	7980
tgggggcccc	gttacaactc	aggagtctgg	ctcctgatca	tgtgacctgc	tcgtcagttt	8040
cctttctggc	caacccaaaag	aacatctttc	ccataggcat	ctttgtccct	tgccccacaa	8100
aaattctctc	ttctcttttg	ctgcagagtg	tagatcccaa	aaattaccca	aagaagaaga	8160
tggaaaagcg	atttgtcttc	aacaagatag	aatcaataa	caagctggaa	tttgagtctg	8220
cccagttccc	caactgggtac	atcagcacct	ctcaagcaga	aaacatgcc	gtcttctctg	8280
gagggacca	aggcggccag	gatataactg	acttcaccat	gcaatttgtg	tcttctctaaa	8340
gagagctgta	cccagagagt	cctgtgctga	atgtggactc	aatccctagg	gctggcagaa	8400
agggaaacaga	aagggtttttg	agtaacggcta	tagcctggac	tttctctgtg	tctacaccaa	8460

```

tgcccaactg cctgccttag ggtagtgeta agaggatctc ctgtccatca gccaggacag 8520
tcagctctct cctttcaggg ccaatcccca gcccttttgt tgagccaggc ctctctcacc 8580
tctcctactc acttaaagcc cgctgacag aaaccacggc cacatttggt tctaagaaac 8640
cctctgtcat tcgtccccc attctgatga gcaaccgctt cectatttat ttatttattt 8700
gtttgtttgt tttgattcat tgggtctaatt tattcaaagg gggcaagaag tagcagtgtc 8760
tgtaaaagag cctagttttt aatagctatg gaatcaattc aatttggact ggtgtgctct 8820
ctttaaatca agtcctttta ttaagactga aaatatataa gctcagatta tttaaatggg 8880
aatattttata aatgagcaaa tatgatactg ttcaatgggt ctgaaataaa cttcactgaa 8940
gaaaaaaaaa aaaggtctct tctgatcat tgactgtctg gattgacact gacagtaagc 9000
aaacaggctg tgagagttct tgggactaag cccactcctc attgctgagt gctgcaagta 9060
cctagaaata tccttggeca ccgaagacta tctcctcac ccattccctt tatttcgttg 9120
ttcaacagaa ggatattcag tgcacatctg gaacaggatc agctgaagca ctgcaggagg 9180
tcaggactgg tagtaacagc taccatgatt tatctatcaa tgcaccaaac atctgttgag 9240
caagcgctat gtactaggag ctgggagtac agagatgaga acagtcacaa gtccctcctc 9300
agataggaga ggcagctagt tataagcaga acaaggtaac atgacaagta gagtaagata 9360
gaagaacgaa gaggagtgc caggaaggag ggaggagaac gacataagaa tcaagcctaa 9420
agggataaac agaagatttc cacacatggg ctggggccat tgggtgtcgg ttacgcctgt 9480
aatcccagca ctttgggtgg caggggcaga aagatcgctt gagcccagga gttcaagacc 9540
agcctgggca acatagtgc actcccatct ctacaaaaaa taaataaata aataaaaaca 9600
tcagccaggc atgctggcat gcacctgtag tctagctac ttgggaagct gacactggag 9660
gattgcttga gccagaagt tcaagactgc agtgagctta tccgttgacc tgcaggctga 9720
c

```

```

<210> 3
<211> 23
<212> DNA
<213> Unknown

```

```

<220>
<223> Description of Unknown Organism: natural or
      synthetic oligonucleotide

```

```

<400> 3
gctcccacat tctgatgagc aac

```

23

```

<210> 4
<211> 22
<212> DNA
<213> Unknown

```

```

<220>
<223> Description of Unknown Organism: natural or
      synthetic oligonucleotide

```

```

<400> 4
tgcagcactc agcaatgagg ag

```

22

```

<210> 5
<211> 32
<212> DNA
<213> Unknown

```

```

<220>
<223> Description of Unknown Organism: natural or
      synthetic oligonucleotide

```

```

<400> 5
cccatttaaa tctgagctta tatattttga gt

```

32

<210> 6  
 <211> 21  
 <212> DNA  
 <213> Unknown

<220>

<223> Description of Unknown Organism: natural or  
 synthetic oligonucleotide

<400> 6  
 tcaatttgga ctggtgtgct c

21

<210> 7  
 <211> 28  
 <212> DNA  
 <213> Unknown

<220>

<223> Description of Unknown Organism: natural or  
 synthetic oligonucleotide

<400> 7  
 tcagaacct tgaacagtat gatatttg

28

<210> 8  
 <211> 42  
 <212> DNA  
 <213> Unknown

<220>

<223> Description of Unknown Organism: natural or  
 synthetic oligonucleotide

<400> 8  
 atcaagtcct ttaattaaca ctgaaaatat ataagctcag at

42

<210> 9  
 <211> 45  
 <212> DNA  
 <213> Unknown

<220>

<223> Description of Unknown Organism: natural or  
 synthetic oligonucleotide

<400> 9  
 aatcaagtcc ttaattaag aactgaaaat atataagctc agatt

45

<210> 10  
 <211> 44  
 <212> DNA  
 <213> Unknown

<220>

<223> Description of Unknown Organism: natural or  
 synthetic oligonucleotide



<400> 10  
 aatctgagct tatatatattt cagtcttaat taaaggactt gatt 44  
  
 <210> 11  
 <211> 44  
 <212> DNA  
 <213> Unknown  
  
 <220>  
 <223> Description of Unknown Organism: natural or  
 synthetic oligonucleotide  
  
 <400> 11  
 aatctgagct tatatatattt cagtgttaat taaaggactt gatt 44  
  
 <210> 12  
 <211> 22  
 <212> DNA  
 <213> Unknown  
  
 <220>  
 <223> Description of Unknown Organism: natural or  
 synthetic oligonucleotide  
  
 <220>  
 <223> "n" at positions 11-16 represent a, t, c, g or unknown  
  
 <400> 12  
 ccgactcgag nnnnnnatgt gg 22  
  
 <210> 13  
 <211> 23  
 <212> DNA  
 <213> Unknown  
  
 <220>  
 <223> Description of Unknown Organism: natural or  
 synthetic oligonucleotide  
  
 <400> 13  
 ctgcgtgttg aaagatgata agc 23  
  
 <210> 14  
 <211> 25  
 <212> DNA  
 <213> Unknown  
  
 <220>  
 <223> Description of Unknown Organism: natural or  
 synthetic oligonucleotide  
  
 <400> 14  
 aagtgagtag gagaggtgag sgagg 25  
  
 <210> 15  
 <211> 20  
 <212> DNA  
 <213> Unknown

<220>  
<223> Description of Unknown Organism: natural or  
synthetic oligonucleotide

<400> 15  
agccgtagac ggaacttgcg 20

<210> 16  
<211> 19  
<212> DNA  
<213> Unknown

<220>  
<223> Description of Unknown Organism: natural or  
synthetic oligonucleotide

<400> 16  
ctaaaacagc ggaagaggt 19

<210> 17  
<211> 20  
<212> DNA  
<213> Unknown

<220>  
<223> Description of Unknown Organism: natural or  
synthetic oligonucleotide

<400> 17  
caggactctc tgggtacagc 20

<210> 18  
<211> 20  
<212> DNA  
<213> Unknown

<220>  
<223> Description of Unknown Organism: natural or  
synthetic oligonucleotide

<400> 18  
tcgtactgtc tagagcttgt 20